[4910-13-P]

### DEPARTMENT OF TRANSPORTATION

**Federal Aviation Administration** 

**14 CFR Part 39** 

[Docket No. FAA-2019-0859; Product Identifier 2019-NM-114-AD]

**RIN 2120-AA64** 

Airworthiness Directives; The Boeing Company Airplanes

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes. This proposed AD results from fuel system reviews conducted by the manufacturer. This proposed AD would require replacement of the bonding jumpers on the auxiliary power unit (APU) fuel pump. This proposed AD would also require, for certain airplanes, installation of a second bonding jumper; an inspection of the override/jettison fuel pumps and transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid and replacement of the bonding jumper if necessary; and replacement of the bonding jumper on the electrical scavenge fuel pump. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to https://www.regulations.gov. Follow the instructions for submitting comments.
  - Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West
   Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC
   20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet https://www.myboeingfleet.com. You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available on the Internet at https://www.regulations.gov by searching for and locating Docket No. FAA-2019-0859.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at https://www.regulations.gov by searching for and locating Docket No. FAA-2019-0859; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received,

and other information. The street address for Docket Operations is listed above.

Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Jeffrey Rothman, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3558; email: jeffrey.rothman@faa.gov.

#### **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2019-0859; Product Identifier 2019-NM-114-AD" at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments received, without change, to https://www.regulations.gov, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this NPRM.

### **Discussion**

The FAA has examined the underlying safety issues involved in fuel tank explosions on several large transport airplanes, including the adequacy of existing regulations, the service history of airplanes subject to those regulations, and existing maintenance practices for fuel tank systems. As a result of those findings, the FAA issued

a final rule titled "Transport Airplane Fuel Tank System Design Review, Flammability Reduction, and Maintenance and Inspection Requirements" (66 FR 23086, May 7, 2001). In addition to new airworthiness standards for transport airplanes and new maintenance requirements, that rule included Amendment 21-78, which established Special Federal Aviation Regulation No. 88 ("SFAR 88") at 14 CFR part 21. Subsequently, SFAR 88 was amended by Amendment 21-82 (67 FR 57490, September 10, 2002; corrected at 67 FR 70809, November 26, 2002) and Amendment 21-83 (67 FR 72830, December 9, 2002; corrected at 68 FR 37735, June 25, 2003, to change "21-82" to "21-83").

Among other actions, SFAR 88 requires certain type design (i.e., type certificate (TC) and supplemental type certificate (STC)) holders to substantiate that their fuel tank systems can prevent ignition sources in the fuel tanks. This requirement applies to type design holders for large turbine-powered transport airplanes and for subsequent modifications to those airplanes. It requires them to perform design reviews and to develop design changes and maintenance procedures if their designs do not meet the new fuel tank safety standards. As explained in the preamble to the final rule published on May 7, 2001, the FAA intended to adopt airworthiness directives to mandate any changes found necessary to address unsafe conditions identified as a result of these reviews.

In evaluating these design reviews, the FAA has established four criteria intended to define the unsafe conditions associated with fuel tank systems that require corrective actions. The percentage of operating time during which fuel tanks are exposed to flammable conditions is one of these criteria. The other three criteria address the failure types under evaluation: single failures, single failures in combination with another latent condition(s), and in-service failure experience. For all four criteria, the evaluations

included consideration of previous actions taken that may mitigate the need for further action.

The FAA has determined that the actions identified in this proposed AD are necessary to reduce the potential of ignition sources inside fuel tanks, which, in combination with flammable fuel vapors, could result in fuel tank explosions and consequent loss of the airplane.

The FAA has received data from the fuel tank inspection program indicating that the existing bond path design provides insufficient bond resistance margin between the fuel pump motor/impeller and structure. In the event of a fuel pump electrical fault, this condition might cause arcs at the existing fuel pump/tank interfaces and an ignition of fuel vapor in the wing fuel tank, which could result in a fuel tank explosion.

## Related Service Information under 1 CFR part 51

The FAA reviewed Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001. This service information describes procedures for a replacement of the bonding jumpers on the APU fuel pump; an inspection of the six override/jettison fuel pumps and of the two transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid, and replacement of the existing bonding jumper if the bonding jumper has a one-piece braid; installation of a second bonding jumper; and replacement of the bonding jumper on the electrical scavenge fuel pump.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

### **Other Relevant Rulemaking**

Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001, identifies "Boeing Service Bulletin 747-28-2033" as a concurrent requirement for certain airplanes. Boeing Alert Service Bulletin 747-28A2033, Revision 1, dated December 18, 2003, is the appropriate source of service information for accomplishing the installation required by AD 2005-01-07, Amendment 39-13931 (70 FR 1336, January 7, 2005) ("AD 2005-01-07"). The compliance time for accomplishing the installation required by AD 2005-01-07 has already passed; therefore, it is not necessary to include Boeing Alert Service Bulletin 747-28A2033 as a concurrent requirement in this proposed AD. The FAA issued AD 2005-01-07 to ensure adequate electrical bonding between the housing of each fuel pump and airplane structure outside the fuel tanks. Inadequate electrical bonding, in the event of a lightning strike or fuel pump electrical fault, could cause electrical arcing and ignition of fuel vapor in the wing fuel tank, which could result in a fuel tank explosion.

## **FAA's Determination**

The FAA is proposing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

## **Proposed AD Requirements**

This proposed AD would require accomplishing the actions specified in the service information described previously.

## **Costs of Compliance**

The FAA estimates that this proposed AD affects 74 airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

## **Estimated costs**

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replacement, Installation, and Inspection	Up to 15 work-hours X \$85 per hour = Up to \$1,275	Up to \$2,000	Up to \$3,275	Up to \$242,350

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of aircraft that might need these replacements:

### **On-condition costs**

Action	Labor cost	Parts cost	Cost per product
Replacement	Up to 6 work-hours X \$85 per hour = Up to \$510	Up to \$950	Up to \$1,460

## **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds

necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This proposed AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

## **Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

# **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

# **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

## § 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**The Boeing Company**: Docket No. FAA-2019-0859; Product Identifier 2019-NM-114-AD.

### (a) Comments Due Date

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

### (b) Affected ADs

None.

# (c) Applicability

This AD applies to The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes, certificated in any category, line numbers (L/Ns) 1 through 1229 inclusive.

## (d) Subject

Air Transport Association (ATA) of America Code 28, Fuel.

## (e) Unsafe Condition

This AD was prompted by fuel system reviews conducted by the manufacturer indicating that the existing bond path design provides insufficient bond resistance margin between the fuel pump motor/impeller and structure. The FAA is issuing this AD to address insufficient bond resistance margin between the fuel pump motor/impeller and structure. In the event of a fuel pump electrical fault, this condition might cause arcs at the existing fuel pump/tank interfaces and an ignition of fuel vapor in the wing fuel tank, which could result in a fuel tank explosion and consequent loss of the airplane.

## (f) Compliance

Comply with this AD within the compliance times specified, unless already done.

# (g) Definitions

For the purposes of this AD, the definitions specified in paragraphs (g)(1) through (4) of this AD apply.

- (1) Group 1 airplanes: L/Ns 1 through 167 inclusive.
- (2) Group 2 airplanes: L/Ns 168 through 971 inclusive.
- (3) Group 3 airplanes: L/Ns 972 through 1161 inclusive.
- (4) Group 4 airplanes: L/Ns 1162 through 1229 inclusive.

## (h) Replacement, Installation, and Inspection

Within 60 months after the effective date of this AD, do the applicable actions specified in paragraphs (h)(1) through (4) of this AD, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-28-2228, Revision 1, dated September 27, 2001.

- (1) For Groups 1, 2, and 3 airplanes: Do the actions specified in paragraphs (h)(1)(i) and (ii) of this AD.
- (i) Do a general visual inspection of the six override/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or two-piece braid. If the bonding jumper has a one-piece braid, within 60 months after the effective date of this AD, replace the existing bonding jumper.
  - (ii) Install a second bonding jumper.
- (2) For Groups 1, 2 and 3 airplanes with horizontal stabilizer fuel tanks: Do the actions specified in paragraphs (h)(2)(i) and (ii) of this AD.
- (i) Do a general visual inspection of the two transfer/jettison fuel pumps to determine if the bonding jumper has a one-piece braid or a two-piece braid. If the bonding jumper has a one-piece braid, within 60 months after the effective date of this AD, replace the existing bonding jumper.
  - (ii) Install a second bonding jumper.
- (3) For all airplanes: Replace the bonding jumpers on the auxiliary power unit (APU) fuel pump.
- (4) For Groups 1 and 2 airplanes: Replace the bonding jumper on the electrical scavenge fuel pump.

## (i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the

manager of the certification office, send it to the attention of the person identified in paragraph (j)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

- (2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.
- (3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

# (j) Related Information

(1) For more information about this AD, contact Jeffrey Rothman, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3558; email: jeffrey.rothman@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet https://www.myboeingfleet.com. You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

Issued in Des Moines, Washington, on October 29, 2019.

Dionne Palermo, Acting Director, System Oversight Division, Aircraft Certification Service.

[FR Doc. 2019-24329 Filed: 11/7/2019 8:45 am; Publication Date: 11/8/2019]